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ABSTRACT

This study investigated the possibility that a teacher's preconceived idea of the worth of an instructional material would affect the academic achievement of the students with whom the material was used. Twenty-four classes of educable retarded children were randomly assigned to one of three groups. Groups I and II were experimenta; group III was the control. Teachers of groups I and II were provided with instructional materials accompanied by fictitious evaluative summaries designed to bias their opinions in a positive or negative direction. The control group teachers received no accompanying biased summaries. Analyses of students' pre- and posttest achievement scores suggested that the impression a teacher held of instructional material significantly influenced subsequent academic achievement. Results also indicated that a teacher's impression of the material was significantly influenced by the activities of Special Education Instructional Materials Centers. (Nine tables of statistical data are included.) (Author/BRB)

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RESEARCH REPORT #2
AN INVESTIGATION OF TEACHER EXPECTANCIES OF INSTRUCTIONAL MATERIALS

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ABSTRACT

This study investigated the possibility that a teacher's preconceived notion of the worth of an instructional material would affect the academic achievement of the youngsters with whom the material was used. Participating teachers were provided with materials accompanied by fictitious evaluative summaries deliberately prepared to bias their opinion in either a positive or negative direction. Analyses of students' pretest and posttest mean scores suggest that the impression a teacher holds of an instructional material may significantly influence subsequent academic achievement. Results also indicate that a teacher's impression of the material may be significantly influenced by the activities of Special Education Instructional Materials Centers.

Several recent research endeavors (Bergan & Smith, 1966; Jones, 1966; Rosenthal, 1967; Rosenthal & Jacobsen, 1966) have rather dramatically demonstrated the possible effects of the attitudes of teachers upon the achievement of their pupils. These studies suggest that in addition to the many factors known to affect pupil development and achievement, educators should also be cognizant of the fact that preconceived notions on the part of the teacher regarding the intellectual ability of a student, may indeed set the rate at which that student will learn.

Another area of increasing concern to all educators, general and special alike, is the effective utilization of instructional materials. If, as it would appear, teacher-held expectancies influence pupil achievement, one might conclude that this factor also has relevance for the selection and utilization of instructional materials.

It follows, in this writer's opinion, that preconceived teacher attitudes relative to the effectiveness of specific instructional materials will have a bearing on the ultimate effectiveness of those materials. That is to say, a teacher who had confidence in a given instructional material and believes that it will work, will find that indeed it does work. Conversely, a teacher who lacks confidence in an instructional material will find that it is of little value. The purpose of this study was to investigate the effect of teacher expectancies with regard to instructional materials on pupil achievement.

Essentially, the study was designed to answer the following questions:

1. Will providing teachers with evaluative information relative to instructional materials significantly influence the academic achievement of students with whom the materials are used?

   Specifically, this question was investigated under the following conditions:

   a. Will positive information relative to the alleged effectiveness of materials result in significantly greater academic achievement than either negative information or no information

   b. Will negative information relative to the alleged effectiveness of materials result in significantly less academic achievement than no information?

2. Does a teacher's impression of the material, after using it, reflect the evaluation provided by the Special Education Instructional Materials Center?

Materials

Two sets of instructional materials, the Alpha Chest, and Programmed Time Telling, were selected for use in the study. The Alpha Chest, a manipulative device which aids in the teaching of the alphabet, is marketed by Age Stein and Company of Seattle, Washington. Programmed Time Telling, a highly structured workbook designed to teach time telling, was developed by Dr. Alan Hofmeister in cooperation with the Northwest Regional Special Education Instructional Materials Center.

In addition to the two instructional materials, several other types of material were utilized in this study. These were:

1. Accession Sheets - This refers to duplicated material which has been developed by the Northwest Regional Special Education ~~Instructional~~ Materials Center (NWSEIMC) in order to disseminate both bibliographical and evaluative information relative to instructional materials. Primary recipients of this information are special education practitioners from throughout the Center's service region. Each Accession Sheet contains several evaluation summaries relative to the instructional material.
2. Final Questionnaire - This refers to a questionnaire designed for use in this study. The purpose of this questionnaire was to assess the opinions of participating teachers relative to the two instructional materials utilized, value of services provided by NWSEIMC, etc.

Method

Twenty-four primary classes for educable mentally retarded (EMR) youngsters were selected to participate in the study. The twenty-four classes were randomly assigned to one of three groups. Groups I and II comprised the experimental portion of the study. Group III was designated as the contrast group.

Instructional materials utilized by the teachers in all three groups were identical. Each teacher was asked to use the materials in accordance with the directions and suggestions provided by the

producer and to use each material for a minimum period of 30 minutes per day, for 24 days.

The evaluation summaries reported via the Accession Sheet to Group I, were fictitious and deliberately prepared to influence the teacher's impression of the Alpha Chest in a highly positive manner. Evaluation summaries for Programmed Time Telling were also fictitious and deliberately fashioned in order to influence Group I teachers in a highly negative manner.

The situation for Group II was reversed with respect to the evaluations provided. Teachers in this group received Accession Sheets which were designed to influence their opinion in a highly positive direction for the Programmed Time Telling and in a highly negative fashion for the Alpha Chest.

Teachers in Group III (contrast) were given no Accession Sheets whatsoever. No attempt was made to provide these teachers with any knowledge of the results of prior evaluations. Placement of materials is summarized in Table 1.

Insert Table 1 about here

Teachers in all groups were unaware that these evaluations were fictitious or that other teachers were utilizing identical instructional materials.

Teachers in all three groups utilized the materials for a period of 24 school days. On day one of the study, youngsters were tested on their ability to reproduce the lower case manuscript alphabet and to tell time. On the 25th day a new set of testers,

unaware of the experimental or contrast placement of teachers, administered the posttest to the youngsters. The posttest procedure consisted of readministering the instruments used to gather pretest data. At this time, each teacher completed a rating scale which was designed to assess his opinion of the material and his impressions of its effectiveness with his youngsters.

Results

The mean score for each classroom served as the basic unit for analysis. A single factor design with three independent treatment groups was employed. Statistical treatment consisted of Analysis of Variance done on posttest scores with the effects of pretest scores equalized through Analysis of Covariance. Orthogonal comparisons were computed to determine the significance of differences between specific treatments. Chi Square analyses were done to determine the amount of agreement between evaluative information provided at the beginning of the study and teachers' impressions of the material at the conclusion of the study.

Data Analyses for Alpha Chest

Table 2 presents the pretest and posttest means on the alphabet test for classrooms dichotomized on the basis of evaluative information provided on the Alpha Chest. The analyses of variance on posttest scores with pretest scores covaried, represented in Table 3, indicated that there were significant differences among treatment groups. Subsequent orthogonal comparisons, summarized in Table 4, indicated that positive Accession Sheets yielded greater gains in alphabet

recognition than negative Accession Sheets and no information at all. Negative Accession Sheets did not produce less achievement than provision of no information.

Insert Tables 2, 3, 4 about here

Data Analyses For Programmed Time Telling

Pretest and posttest means for time telling are presented in Table 5. Mean scores reported are dichotomized on the basis of the evaluation summaries provided to the teachers. Table 6, the analysis of variance on posttest scores with pretest scores covaried, indicated that little difference existed between treatment groups. Orthogonal comparisons, presented in Table 7, indicated that although a slight tendency did exist for positive evaluations to enhance subsequent academic achievement, the difference did not approach statistical significance. Differences in academic achievement resulting from negative evaluations, as compared to no evaluations, were virtually nonexistent.

Insert Tables 5, 6, 7 about here

Chi Square Analyses

In order to determine whether or not the teachers' impression of the material, after using it, reflected the evaluation provided by the SEIMC, Chi Square Analyses were done for Programmed Time Telling and the Alpha Chest. The analyses was based on an expected frequency of eight in each of the three treatment conditions as determined by the design of the study. Observed frequencies were determined by scores earned on the final questionaire.

Insert Tables 8 & 9 about here

Highly significant Chi Squares were obtained for teachers with respect to Programmed Time Telling, indicating an unwillingness on the part of teachers to accept the negative evaluations provided. The Chi Square analysis for the Alpha Chest, however, failed to yield significant results, indicating general agreement with the evaluation summaries provided. Interpreting these data, one is led to the conclusion that teachers tended to agree with the SEIMC evaluation, whether positive or negative, for the Alpha Chest; and the positive evaluation of Programmed Time Telling. They rejected the negative evaluation for Programmed Time Telling.

Conclusions

The results of the study suggest that the impression a teacher holds of an instructional material is influenced by the type of evaluative information provided via such vehicles as the SEIMC Accession Sheet. They suggest further than the impression a teacher holds of an instructional material may significantly influence the achievement of youngsters with whom the material is used. Programmed materials, however, tended to be resistant to the effects of teacher held impressions. This resistence is probably due, at least in part, to the fact that programmed materials are largely auto-educational and involve the teacher far less than more traditional types of instructional materials. Finally, the results clearly indicated that the SEIMC's can have a major impact on special education through the development of realistic evaluation procedures and dissemination techniques.

Implications

These conclusions constitute one more example of the possible effects of pre-conceived attitudes and impressions on the educational process. An awareness of the fact that perceived worth of a particular teaching material may indeed affect its actual worth, should greatly assist teachers in making realistic judgements as to the materials which they select for use in their classrooms.

The teacher trainer has a major role to play in guiding the prospective teacher through both academic and practical preparation for teaching. It is the teacher trainer who must create the awareness of the implications of experimenter bias. It is the teacher trainer who will encourage from his students those inquiries and innovations which will lead to the methodologies and techniques for dealing with the effects of experimenter bias. Finally, it is the teacher trainer who will instill in his students the desire to utilize instructional materials in the most effective and efficient manner possible. Obviously, to accomplish this, one must be capable of evaluating an instructional material according to the intrinsic value of the material itself, without regard to marketing features which may be of secondary importance.

Perhaps the most important implication of the present study, however, lies within the realm of the Regional Special Education Instructional Materials Centers. A major purpose of the Centers is is the evaluation of instructional materials and subsequent broad dissemination of the findings to practitioners in the field. The SEIMC's must be aware of the potential of this process for influencing

teacher-held opinions of instructional materials. This magnifies the responsibility for devising realistic and meaningful evaluation models. If, as it appears, teachers tend to accept the SEIMC evaluation and further, that this acceptance has a bearing on the academic achievement of the youngsters with whom that materials is used, then care must be taken to disseminate information which truly and accuarately reflects the intrinsic value of the material.

Finally, the commercial producer must be aware of the potential effects of his advertising and packaging techniques. The fact that a market exists must cease to be a rationale for producing and celling ineffective instructional materials. Advertising claims for materials should reflect and evaluative research rather than such things as testimonials and highly positive but frequently unsupportable statements characterizing current advertising procedures. Commercial producers, as well as the SEIMC's, must become cognizant of the effects of their activities on the educational scene and stand accountable.

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TABLE 1

Schematic of Placement of Materials and Evaluations

Group I		Group II		Group III	
Material	Evaluation	Material	Evaluation	Material	Evaluation
Alpha Chest	positive	Alpha Chest	negative	Alpha Chest	no evaluations
Time Telling	negative	Time Telling	positive	Time Telling	Provided

TABLE 2

Summary Table for Pretest and Posttest Means
for Three Treatment Groups with the Alpha Chest

Positive		Negative		Contrast	
Pre	Post	Pre	Post	Pre	Post
10.80	17.80	5.00	6.50	3.00	5.70
2.20	5.80	1.40	7.20	3.00	8.50
1.50	7.75	0.50	1.50	2.00	6.40
1.20	4..)	6.00	7.66	6.75	8.50
10.80	11.60	6.60	7.40	11.80	16.20
5.50	12.50	17.25	20.50	0.50	3.75
5.00	10.40	12.75	15.00	3.80	2.60
8.50	14.80	1.00	3.00	6.20	8.40
45.50	84.85	50.50	62.76	37.05	60.10
5.69	10.61	6.31	8.60	4.63	7.51
	10.46		7.82		8.43
)'	83.68		62.56		67.44

Obtained using Regression Coefficient yielded by Analysis of Covariance. Value for Regression Coefficient was 1.01 based on the formula:

$$b = \frac{\Sigma x \quad y \quad z}{\Sigma_x 2_w}$$

)': Obtained by multiplying the $\bar{x}'$ by N for each group.

TABLE 3

Analysis of Covariance of Alpha Chest Posttest Scores
With Pretest Scores as Covariate

Source	SS	df	MS	F
Between Groups				
Treatment	31.46	2	15.73	3.78*
Within Groups				
Error	83.17	20	4.16	
Total	114.63	22		

F .95 = 3.49

* $p < .05$

TABLE 4

Orthogonal Comparisons for Alpha Chest Utilizing Posttest Means Adjusted via the Regression Equation Obtained from the Analysis of Covariance

Source	Orthogonal Weights (+)	(-)	(c)	df	SS	MS	F
Between Groups							
(+) vs. (-) & (c)	2	-1	-1	1	29.08	29.08	6.99*
(-) vs. (c)	0	-1	1	1	1.49	1.49	0.36
Within Groups							
Error				20	83.17	4.16	
Total				22	114.63		

F .95 = 4.35

* $p < .05$

TABLE 5

Summary Table for Pretest and Posttest Means on Three Treatment Groups with Programmed Time Telling

	Positive		Negative		Contrast	
	Pre	Post	Pre	Post	Pre	Post
	15.25	27.50	18.50	18.75	21.75	27.00
	6.20	7.40	5.00	7.20	12.40	17.80
	5.80	10.40	10.80	11.80	6.80	12.00
	21.60	32.60	14.80	16.80	17.25	19.50
	6.40	9.40	10.00	25.20	18.60	28.20
	8.25	21.25	4.75	19.00	0.80	1.60
	9.20	21.80	9.40	12.20	5.40	11.30
	8.25	13.00	7.25	11.25	4.80	12.20
Σx	80.95	143.35	80.50	122.20	87.80	130.10
$\bar{x}$	10.12	17.29	10.06	15.28	10.98	16.26
x'		18.21		15.64		15.62
$(\Sigma x)'$		145.68		125.12		124.96

x': Obtained using Regression Coefficient yielded by Analysis of Covariance. Value for Regression Coefficient was 1.08 based on the formula:

$$b = \frac{\Sigma_x y_z}{\Sigma x^2 w}$$

$(\Sigma x)'$: Obtained by multiplying the x' by N for each group.

TABLE 6

Analysis of Covariance of Programmed Time Telling Posttest Scores with Pretest Scores as Covariate

	SS	df	MS	F
Between Groups				
Treatment	35.48	2	17.74	.762
Within Groups				
Error	465.72	20	23.29	
Total	501.20	20		

F .95 = 3.49

TABLE 7

Orthogonal Comparisons for Programmed Time Telling Utilizing Posttest Means Adjusted via the Regression Equation Obtained from the Analysis of Covariance

Source	Orthogonal Weights (+)	(-)	(c)	df	SS	MS	F
Between Groups							
(+) vs. (-) & (c)	2	-1	-1	1	35.50	35.50	1.52
(-) vs. (c)	0	-1	1	1	.16	.16	0.00
Within Groups							
Error				20	465.72	23.29	
Total				22	114.63		

F .95 = 4.35

TABLE 8

Chi Square Analysis for Programmed Time Telling

	(+)	(-)	(c)	Total
fo	19	1	4	24
fe	8	8	8	24
fo-fe	11	-7	-4	
Yates Correction - (.05)	10.5	-6.5	-3.5	
$(fo-fe)^2$	110.25	42.25	12.25	
$\frac{(fo-fe)^2}{fe}$	13.78	5.28	1.53	$x^2 = 20.59^*$

X^2 .99 = 9.210

*P < .01

TABLE 9

Chi Square Analysis for the Alpha Chest

	(+)	(-)	(c)	Total
fo	14	6	4	24
fe	8	8	8	24
fo-fe	6	-2	-4	
Yates Correction - (.05)	5.5	1.5	3.5	
$(fo-fe)^2$	30.25	2.25	12.25	
$\frac{(fo-fe)^2}{fe}$	3.78	.28	1.53	$x^2 + 5.59$

x^2 .99 = 9.210